WHAT IS CLAIMED IS :

1. A method for making balls or solder connection pads on an electrically conductive connection-receiving zone of an electric component, the method comprising an operation for the injection of conductive liquid alloy into a guide open at one end placed so as to face the connection-receiving zone of the component, wherein the guide is formed by two separable parts, a mold and an injection matrix, the mold and the injection matrix comprising passages, with a narrowing of the guide at the level of the separation of the parts, and the parts of the guide are separated while the alloy is in the liquid state.

2. A method according to claim 1, wherein, the mold is removed from the component before the solidification of the alloy, the molten metal present on the connection-receiving zone of the component taking the shape of a ball when it cools down.

3. A method according to claim 1, wherein the mold is cooled below the liquidus point of the alloy so that the alloy gets solidified in the mold after the separation of the parts, the mold is separated from the component and, optionally, the alloy is remelted so that it takes the form of a ball.

4. A method according to claim 2, comprising the following steps:

- the positioning the component on the mold and the holding of the component by pressure on the mold, then the injecting of liquid alloy under pressure into the guide, the rapid filling of the first passages of the mold and the wetting of the connection-receiving zones of the component, the mold being at a temperature below that of the injection matrix but higher than the liquidus threshold of the alloy.

- the withdrawal of the liquid alloy into the injection matrix followed by the separation of the mold from the injection matrix, the liquid alloy filling the first passages of the mold that remain in the mold, the mold being colder than the injection matrix and the connection-receiving zone which has been wet by the alloy having a greater surface area than the hole of the mold on the injection matrix side.

- the separation of the component of the mold before the alloy solidifies, the alloy having wet a sufficient surface area of the connection-receiving zone so that the liquid alloy remains clinging to the component and not to the mold.

- the cooling of the alloy producing its solidification in the form of a sphere.

5. A method according to claim 4, wherein the withdrawal of the alloy from the injection matrix is obtained by a reversal of the pressure of injection of the liquid alloy into the guide.

6. A method according to claim 4, wherein the withdrawal of the alloy from the injection matrix is obtained by a drop in the pressure of injection of the liquid alloy into the guide.

7. A method for making solder pads on a substrate according to claim 3, comprising the following steps :

- the positioning of the component on the mold and the holding of the component by pressure on the mold, then the injecting of liquid alloy under pressure into the guide, the rapid filling of the first passages of the mold and the wetting of the connection-receiving zones of the component, the mold being at a temperature below the liquidus threshold of the alloy but high enough to enable the wetting of the connection-receiving zones and the filling of the passages.

- the holding of the mold at a temperature below the liquidus threshold of the alloy so that it solidifies rapidly in the first passages of the mold;

- the withdrawal of the liquid alloy into the injection matrix followed by the separation of the mold from the injection matrix,

- the separation of the component from the mold revealing solder pads soldered to the connection-receiving zones, having the shape of the first passages of the mold.

8. A method according to claim 7, wherein the withdrawal of the alloy from the injection matrix is obtained by a drop in the pressure of injection of the liquid alloy into the guide.

9. A method according to claim 7, wherein a reflow of the solder pads is carried out, making it possible to obtain connections in the forme of balls that are perfectly positioned with respect to the connection-receiving zone.

10. A method according to claim 9, wherein the reflow of the pads is done in batches in a stove with a neutral environment of the nitrogen type.

11. A method according to claim 1, wherein the guide is made to vibrate at the time of the separation of the parts, so that the break of the solder between the

two parts of the guide takes place at the same place at the level of the narrowing of the guide, thus providing for very high reproducibility of the volume of the solder connection pads.

12. A method according to claim 4, wherein an inert gas enables the saturation of the atmosphere beneath the alloy and in the second passages of the injection matrix.

13. A guide for the making of balls or solder connection pads on electrically conductive connection-receiving zones of an electronic component, the guide being designed to contain a conductive liquid alloy and being open at one end, wherein it is formed by two separable parts comprising passages with a narrowing of the guide at the level of the separation of the parts.

14. A guide according to claim 13, wherein the two parts are separable in the direction of injection of the liquid alloy in the guide.

15. A guide according to claim 13, comprising a mold 16 and an injection matrix 18, each having two main parallel faces, one substrate face, one internal mold face for the mold, and an internal face and an external face for the injection matrix, the mold and the injection matrix respectively comprising first passages in the mold and seconds passages in the injection matrix, each of the first passages being aligned coaxially along an axis XX' with one of the respective second passages facing it, the axis XX' being substantially perpendicular to the main faces of the guide.

16. A guide according to claim 15, wherein the first and second passages have a truncated cone shape, the small diameters of the truncated passages facing each other at the level of the separations of the two parts of the guide so that when these faces are in contact, the passage in the guide comprises a narrowing or a sudden flexure in the diameter of the guide at the level of the separation of the parts.

17. A guide according to claim 16, wherein the apertures with the smallest diameter of the first and second truncated passages respectively on the faces of the mold and the injection matrix in contact have the same diameter.

18. A guide according to claim 16, wherein the aperture of the first passage of the mold facing the injection matrix has a diameter greater than the diameter of

the aperture of the second passage of the injection matrix facing the mold.

19. Guide according to claim 16, wherein the aperture of the first passage of the mold facing the injection matrix has a diameter greater than the aperture of the second passage of the injection matrix facing the mold, a shoulder of the aperture on the internal face side of the second passage of the injection matrix penetrating, when the mold and the injection matrix are in contact, into the first truncated passage of the mold.

20. A guide according to claim 15, wherein the first passage of the mold is semi-spherical, the biggest aperture being located on the substrate face of the mold and a small aperture being located on the internal face of the mold, the second passage having a truncated cone shape, its smallest aperture being on the internal face of the injection matrix facing the small semi-spherical aperture of the first passage.

21. A guide according to claim 15, wherein the first passage in the mold is truncated, the smallest diameter of the first passage facing the injection matrix and the second passage in said injection matrix having a cylindrical shape with a diameter that is very small as compared with the smallest diameter of the first passage in the mold.

22. A guide according to one of the claims 15 to 21, wherein the mold is made out of a material chosen from among stainless steel 316L with chemical deburring, or graphite, or Teflon, or silicon.

SUB a1

ADD a2

ADD a3